THE EFFECT OF A GUIDED INQUIRY APPROACH TO MEASURING HIGH-LEVEL THINKING SKILLS OF MADRASAH ALIYAH STUDENTS ON ELASTICITY MATERIALS

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Abstract: Learning activities at MAN 2 Marabahan so far have led to observation activities but have not optimally applied the guided inquiry approach in detail. This resulted in students' higher order thinking skills have not been honed, which is actually very necessary in physics education. This study aims to measure students' higher order thinking skills. This research was analyzed descriptively. The samples of this study were students of class XI IPA 2 and XI IPA 3 as the treatment and class XI IPA 1 as the control class. Based on the results of the study, students' higher order thinking skills were better when using a guided inquiry approach.

Keywords: influence, guided inquiry, higher order thinking skills, elasticity

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PRELIMINARY

Learning is a process of change, namely changes in behavior as a result of interaction with the environment in meeting the needs of life. Gagne gives two definitions of learning: 1) learning is a process to gain motivation in knowledge, skills, habits, and behavior, 2) learning is the mastery of knowledge or skills obtained from instruction. Education is a means of realizing quality human resources (Fahmi and Irhasyuarna, 2019). To support this, the government must always update the curriculum on a regular basis.

Education Unit Level Curriculum (KTSP) which demands that the learning process be student-centered which can be seen from the learning tools. Learning devices designed in accordance with the demands of the KTSP expect students to be more active in learning activities so that they can build their own knowledge and are expected to increase students' understanding to hone their thinking skills. The pattern or teaching method of teachers has changed from conventional methods towards learning methods that activate students.

Learning tools that are in accordance with the demands of the KTSP are indeed not easy to design, especially with the enactment of Permendiknas No. 41 of 2007 concerning RPP which requires the integration of the values of cultural education and national character through active learning. There needs to be improvements in the design of learning devices, especially in this case for physics lessons. Physics education emphasizes the process so that students find facts, build concepts, theories, and scientific attitudes on the part of students which can have a positive effect on the quality of educational products. The learning devices designed are expected to be a forum for the implementation of goals that are in accordance with the demands of the curriculum (Fahmi et al., 2021).

Among the approaches that can be applied in learning activities is the guided inquiry approach which is based on constructivist learning theory. According to Suprijono (2009) constructivism is one of the developments of the latest (contemporary) learning model that puts forward the activities of students in every educational interaction to be able to explore and find their own knowledge. This is what makes learning activities that use a guided inquiry approach can create learning activities that are in accordance with learning objectives (Afidayani et al., 2018; Rahayu et al., 2018).

Based on the results of observations, learning the concept of elasticity at MAN 2 Marabahan has provided direct experience to students with observation activities. In addition, in their learning activities they have never applied a guided inquiry approach in detail so that students' thinking skills are still not optimally honed. The solution to this problem could be to apply the lessons learned in the research using a constructivist-based approach. Research conducted by Yulinda (2011) concluded that there is an effect of problem solving processes on learning outcomes, performance and high-level thinking skills of high school students on the concept of waste types and recycling. This kind of research needs to be developed by conducting research on higher-order thinking skills of MA students in learning the concept of elasticity through a guided inquiry approach.

Learning Physics concepts at the elementary, junior high, and high school levels has certain characteristics. Physics concepts at a lower level, namely at the elementary level, are more general and will be more complex at the next level, namely at the junior high and high school levels. These differences will certainly have an impact on the way the material is delivered. Differences in the way the material is delivered must also be adapted to the needs of each child, which will then be applied in their daily lives. For example, the higher the level of education, in addition to developing intellectually, it is also necessary to develop thinking process skills (Putri et al., 2021).

Students can play an active role in their learning activities if they have high creativity. According to Brandt in Penick (1996) creativity is the way a person uses abilities directly. In the process, creative people can rearrange the problem rather than just looking for problems. Questions about a problem often require a solution, so the nature of the question is adapted to the problem (Yasiro et al., 2021).

Three terms related to thinking skills, which are actually quite different; namely high-level thinking (high-level thinking), complex thinking (complex thinking) and critical thinking (critical thinking). Higher order thinking is a cognitive operation that is much needed in thinking processes that occur in short-7 term memory. Higher order thinking includes evaluation, synthesis, and analysis in Bloom's taxonomy. Complex thinking is a cognitive process that involves many stages or parts. Critical thinking is one type of convergent thinking, namely towards one point. The opposite of
critical thinking is creative thinking, namely the type of divergent thinking, which is spread from a point (Sutrisno, 2010). This research using a guided inquiry approach aims to determine students' higher order thinking skills.

Resnick in Nur (2011) defines higher order thinking as follows:
1. Higher order thinking is nonalgorithmic. That is, the sequence of those actions cannot be completely determined in advance.
2. Higher order thinking tends to be complex. The overall sequence or steps cannot be "seen" only from one particular point of view.
3. Higher order thinking often results in multiple solutions, each solution has advantages and disadvantages.
4. Higher order thinking involves careful consideration and interpretation.
5. Higher-order thinking involves the application of multiple criteria so that sometimes there are conflicts between one criterion and another.
6. Higher order thinking often involves uncertainty. Not everything related to the task at hand can be fully understood.
7. Higher order thinking involves self-regulation in the thought process. An individual cannot be considered higher order thinking if there are other people who help at every stage.
8. Higher order thinking involves extracting meaning, and finding patterns in disorder.
9. Higher-order thinking is a strong effort and hard work. Higher order thinking involves the massive mental work required in elaboration and giving consideration.

Higher order thinking skills of students in learning activities can be seen from the ability of students to solve higher order thinking questions.

METHOD
Research on learning the concept of elasticity through a guided inquiry approach to students' higher-order thinking skills was carried out using data collection techniques obtained from the analysis of higher-order thinking questions. Where data on higher order thinking skills were analyzed descriptively and measured categorically, namely good (76-100%), moderate (56-75%), less (40-55%) and poor (< 40%) (Arikunto, 1998).

The population in this study were all students of class XI IPA MAN 2 Marabahan. Samples were set as many as 3 classes, two treatment classes and one control class. The independent variable in this study was a guided inquiry approach including syllabus, teaching materials, lesson plans and worksheets, while the dependent variable was students' higher order thinking skills. The variables controlled in this study were the syllabus, questions, books, the ability of students and teachers.

The research instruments include Syllabus, RPP, LKS, LKS Key, Assessment Sheet, Key Assessment Sheet and teaching materials. The steps for preparing the research instrument are detailed as follows:
1. Making a lesson planning syllabus
2. Prepare RPP, LKS, LKS Key, Assessment Sheet, Key Assessment Sheet and Teaching Materials.

RESULTS AND DISCUSSION
Students' higher order thinking skills were analyzed from students' cognitive abilities for thinking levels C3, C4, C5 and C6 in Table 1. Based on the research data on high-level thinking skills of MA students in learning the concept of elasticity through a guided inquiry approach, the following data have been obtained.

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Table 1. Summary of higher order thinking skills results
Information:
- Good: 76 – 100%
- Medium: 56 – 75%
- Less: 40 – 55%
- Very poor: < 40%

Students' higher order thinking skills as measured by students' ability to solve higher order thinking questions showed an increase. The results of this study in principle have found the effectiveness of the constructivist learning approach to efforts to improve students' higher order thinking skills. This is in line with the previously reported research by Yulinda (2011) which shows that through inquiry processes can improve students' higher order thinking skills, where guided inquiry is classified as constructivist models, so the constructivist learning approach is effective for improving students' higher order thinking skills.

The use of a constructivist learning approach besides being able to improve students' higher order thinking skills can also improve students' critical thinking skills as previously reported by Malik, (2010); Suparman, (2011) in his research. So that learning with this model needs to be carried out, including to achieve learning goals and curriculum goals.

CONCLUSION
Based on the results of research on learning the concept of elasticity through a guided inquiry approach, it can be concluded that students' higher-order thinking skills have increased and deserve to be continuously developed.

REFERENCES


PENGARUH PENDEKATAN INKUIRI TERBIMBING UNTUK MENINGUKUR KETERAMPILAN BERPIKIR TINGKAT TINGGI SISWA MADRASAH ALIYAH PADA MATERI ELASTISITAS

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Kata kunci: pengaruh, inkuiri terbimbing, keterampilan berpikir tingkat tinggi, elastisitas